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ABSTRACT

Educational Facilities Laboratories (EFL) personnel describe several schools constructed under a building-systems program. All these systems schools have in common: (1) long spans for a minimum of supporting columns; (2) systems for heating, cooling, and ventilating; (3) movable walls; and (4) nonglare lighting systems with easily rearranged elements. The interior furnishings and equipment of one school have been systematically coordinated to harmonize with the building design and offer freedom of space and movement. Also included in the paper is a description of a nonschool open plan design called the "office landscape," the economics of which are summarized. (MLF)

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SCHOOLS IN THE 70'S -- THE CASE OF
THE RELEVANT SCHOOLHOUSE.
NASSP DIALOGUE

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Weinstock:

The San Mateo slide - tape report which Ron Partridge jas just shown covers some of the facts underlying school design, and the thoughts of a variety of people concerned with high school education. The concerns these people voiced are quite different from what might have been expected a few years back. Every revolution has its counter revolution, and as our culture becomes more organized, institutionalized, computerized, depersonalized, and technologically administered, we see a formidable drive afoot to carve out a new order of freedom and individuality within society's institutions, particularly schools and colleges.

Today's young, who are fighting so hard to restructure the standardized order of institutions, would hardly regard the NASSP as their ally in that effort. Yet the fact is that the NASSP has been a powerful force in reshaping the American secondary school, particularly through the work of the Trump Commission on Staff Utilization. The Commission

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Weinstock continued:

which challenged that omnipresent building block of school design, the standard 30-student box, has made a lot of trouble for those of us at placed like EFL concerned with school building architecture. There was a day not too long ago when you could do a good deal of your school planning by taking the prospective student population and dividing by 30. But the Trump Commission's questioning of the classroom, its call for variety of group sizes to match varied educational tasks, its call for independent inquiry, and its emphasis on enriched equipment and materials have opened a Pandora's box in school architecture.

Until the Commission stirred things up in the late fifties, school buildings were designed as though the future could not possibly be different from the past- an' error also made by the director of the United States Patent Office who closed the office down in 1892 because he felt everything that could possibly be invented had been invented.

The Trump Commission programs, a revised view of what should be taught and to what end, and the cataclysmic nature of societal events, made the stand Amaerican high school as obsolete at mid-century as fresh air in New York.

Weinstock continued

These programs created the need for a new kind of school architecture that could respond to change and yield to the individual.

It has been EFL's role to provide leadership in exploring the ways in which new schoolhouse forms can meet these requirements - and at the same time meet the taxpayers' legitimate concern that schoolhouses do the job efficiently and economically.

In this connection, one of the most significant achievements of the decade has been the development of a systems approach to school construction. Jonathan King, vice president of EFL, who served as midwife to the birth of the first American school building construction system and who has been deeply involved in all of them, will describe the systems approach.

King

The North American building systems for education grew out of EFL;s efforts to try and treat - at one time - with the new demands of education, new standards of environmental quality, and the increasingly strong pressures for economy in school construction. EFL's

King continued:

objectives were to stimulate a new kind of schoolhouse which was at once economical, comfortable, well-lit, air conditioned, and most importantly, adapted not only to the most advanced educational programs of today, but adaptable to the not-yet-developed programs and equipment of tomorrow.

These building systems projects, which began with the SCSD program in California, include the state-wide Schoolhouse Systems Program in Florida, the Study of Educational Facilities program, or SEF, in Toronto, the RAS (Recherche en Amenagement Scolaires) in Montreal, as well as more recent programs in Detroit, Boston, and Pennsylvania. These projects have been dominated by the twin objectives of improving the industrial efficiency of the building industry to the end that economy and quality be served, and developing facilities better suited to the needs of education so that instruction is served.

Each of these projects has aggregated a significant amount of building volume in order to hold out a carrot to industry sufficiently attractive to encourage the development of new and improved building products for

King continued:

educational purposes. And at the termination of each of these projects, the products have, of course, become part of the mainstream of the building industry. Often, education uses products designed for other segments of the economy rather than to meet its own specific needs. Indeed, a good case can be made for the fact that education does not use its buying power with as much clout as it might.

These systems schools whether in steel for California, in concrete for Montreal, whether one-story in Florida, or three stories in Toronto, all have a number of things in common. Among them are long spans for a minimum of supporting columns to interfere with future rearrangements of the building. All have heating, ventilating, cooling systems to make education a more comfortable process 365 days a year, as well as to facilitate future changes in the building configuration. They all have movable walls so that a superintendent or principal can rearrange spaces without knocking down masonry and admitting he was mistaken in the original layout, and operable walls for dual use of certain spaces. They all have lighting systems

emphasizing lack of glare and easy rearrangement of the elements. In short, these are schools with a built-in second guess about the nature and direction of education. They are schools designed to change with grace.

The problems of change are not, of course, restricted to education. While open plans are becoming increasingly popular for schools to encourage immediate change, the nonschool world is dealing with its own version of these change problems. The office landscape or Burolandschaft movement which developed in Europe in the fifties is now becoming increasingly accepted in the United States.

This particular office landscape is located in - of all places - that bastion of bureaucracy, the Port of New York Authority. It's a 5,700 square foot mock-up to test approaches to be used in the arrangement and furnishing of 8 acres of office space which the Port of New York Authority will occupy in the New World Trade Center when it is completed. The concept calls for space, furniture, and equipment to be arranged according to the logic of the work flow and communications. People who work together are placed in close proximity, regardless of rank, department, or organizational charts which often

King continued:

make more sense on paper than they do in day-to-day activities. To compensate the employees for their lack of partitions, a particular effort has been made to make the space colorful and to increase the level of amenities. The purpose is not just fun, but to produce high work performance while encouraging and expediting the day-to-day interactions. These open plans have the capacity to respond to rapid change. Expansion of staff or contraction or rearrangement of internal relationships can be easily accommodated by relocation of furniture, dividing screen, and the rhododendrons, rather than pulling down partitions and rebuilding walls. The Port of New York Authority estimates that it now costs from $8-10 per square foot to remodel comparatively new modular office space in New York. It costs $.50 per square foot to rearrange office landscape areas. As a result, they expect to save in excess of $400,000 annually on remodeling costs and the rearrangement of communications equipment during the next 10 years.

The economics of office landscape are further corroborated by a recent feasibility study to evaluate its relative benefits in a proposed U.S. Department of Labor Building in Washington. The study, sponsored

King continued:

by the Department of Labor and the General Services Administration, compared landscape and conventional approaches for a huge, five-level building, and found almost every aspect favorable to the landscape approach.

-- They found space utilization higher. Within the same area, the landscape plan will be able to house 582 more people than the conventional plan - a gain in this case of more than 10 percent, representing roughly a 10 percent saving in first cost and in continuing expenses over the life of the building.

-- In addition, they found a savings of 17 percent in the cost per square foot of the open-plan building.

-- And a comparison of the costs of annual maintenance also works out to the advantage of the landscaped installation by 3.9 ¢ per square foot.

Open-plan schools are the educational counterparts of office landscape. While open-plan elementary schools

are increasingly common, open plans are still comparatively rare at the secondary school level. However, the design line between the twin 110-story mountains of steel and glass in New York City where the Port Authority's new offices will be located and the snow-covered peaks of Idaho Springs, Colorado, where this high school is sited, is surprisingly short.

While school building construction has been brought to a high level of sophistication both through the development of building systems and comparable technical developments, by and large interior furnishings and equipment have not kept pace. The result is an interface problem comparable to taking a jet flight which circles for two hours over an airport.

Clear Creek High School, designed by Nixon, Brown, Brokaw, Bowen, for Superintendent of Schools Dr. Robert Metzler, is an example, however, where the interior bits and pieces have been systematically coordinated. In most areas of the school there are no conventional partitions at all. Its architects, administrators, and its furniture consultant, Robert Propst, agreed that it is not always necessary to wrap a floor, a ceiling, and four walls around each class; nor to drape a seminar room around each discussion; nor a cubicle around

King continued:

each student who is working independently. They have not enclosed each teacher's office because they want the easy access and interaction available without doing so.

Clear Creek has put together many of the positive educational concepts of this era. In addition to the freedom of space, there is freedom of movement. Students and teachers are on modular schedules, and consequently when they move around they do so with the dignity of human beings rather than being called into a cattle chute at the clanging of a bell.

For theatrical work, there is an auditorium, of which the stage can be used for rehearsals all the time, isolated by its double, operable partition from the auditorium which itself may be divided into three lecture areas for large-group teaching during the school day. Even the science laboratories, that core of rigidity, controlled by the determinations of plumbing and plumbers, has been loosened up. Lab tables carry their own independent water and drain facilities and bottled gas, and require only that they be plugged into the electrical system.

King continued:

Considerable emphasis in the furnishings has been placed on visual dividers which serve also as display and storage. The school makes significant efforts to provide for a real choice of places for independent study, from the cafeteria which serves also as a commons to an idea center, the collection of periodicals placed next to the commons with stand-up furnishings for casual reading; special audio-visual equipped carrels are provided near the hallway for independent viewing of television and also for listening. There are some in each subject area.

Since the space dividers at Clear Creek are largely furniture, they can be manipulated by the students and staff to serve their needs without recourse to bond issues and higher administrative levels. Thus, the facilities belong to the users, but more on this question of accessibility...

Weinstock:

The Clear Creek School stands out as an elegant application of the current wisdom: an environment supportive of today's requirements for learning - but one that will also yield gracefully to those things we

Weinstock continued:

know lie ahead of us, as well as those we don't know about yet.

A good eal of thought will have to be addressed to the matter of how we can most efficiently house, make accessible, and use, the enormous quantities of materials and equipment necessary for the individual to work his way through the educative process - not the least of which involves physical planning.

According to Frank Stanton, President of CBS, one-half of the U.S. Gross National Product goes to information media industries. The schools are a natural end-point for media products, and where they are not used well, educators will face a diminishing respect for formal schooling as people learn more outside schools than inside. Schoolmen are just beginning to accept the fact that the current generation is more oriented to pictures and sound than to print. Astute schoolmen are capitalizing on it. These are the ones who note that kids go early to a movie-house to be sure to get in, while the same can rarely be said about the schoolhouse. They recognize how immediate

Weinstock continued:

and compelling is the power of a message that comes across an electric wire, be it a voice or an image. But these devices pose questions of how they are to be used effectively, not the least of which involves physical planning.

Some years back in Newark, a crazed killer named Unruh shot down 13 people at random in the streets of the city. He fled to his own house at the edge of town, followed by the police, and a gun battle ensued. For some four days the house was under siege, with police setting up an armed camp around it, machine guns and tear gas at the ready. At intervals, there would be an exchange of fire. The newspapers, hungry for news, had no way of getting at the drama inside that house where a single man was holding off a good portion of the local constabulary. But, on the third day, a bright reporter got an idea. He simply phoned. When the phone rang, Unruh left his battle station at a window and answered. The reporter identified himself and said he was phoning to get the story of what was going on. To which Mr. Unruh replied, as the tear gas shells came through the window, "Listen, I can't talk to you right now. I'm busy at the moment. Can you call back?"

Weinstock continued:

But these devices do pose questions of how they are to be used effectively, not the least of which involves physical planning.

In a moment we will see the Hauppage High School in Long Island, which provides in its media center almost the complete range of information sources. Unfortunately, the building is one of those "new-old" ones. Though opened only two years ago, the planners failed to understand the kinds of information to be stocked, or how they would be used. As a result, there is considerable improvisation that goes on to take advantage of the rich store of available information. But the Hauppage library is worth a quick view, as it suggests the nature of the programs and services, the materials and hands-on accessibility that all secondary schools will have to provide to do their job effectively.

(Slides and commentary)

King

Most of the encouraging development in education in the last decade have been in the suburbs and small towns of North America. The cities often lag behind, impoverished, embittered, and segregated. We would like

King continued:

to close our program by showing you the last two sections of a film, A Child Went Forth, which deals in an optimistic way with the question of our urban schools and their facilities.

The first part of the film, which you will not see, treats with questions which I think are familiar to many of you, the ambiance of the ghetto, the drug addiction problem, the dropout, the old and the decaying school plant which is so prevalent in many of our eastern cities. For those of you who would like to see the entire film, it will be on display tomorrow at your film festival.